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ABSTRACT

The foundation quinmester course outlined is for the auto body repair trainee, to provide him with skills, knowledge, attitudes, and values necessary for performing the required service. It is the second of a series for the auto body repair trainee and requires 80 quinmester hours for completion. The outline consists of eight blocks of instruction subdivided into several units each. Two pages of behavioral objectives precede six pages of course outline and an appended posttest. The bibliography lists several basic references, supplementary references, and audiovisual aids. (Author/AJ)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

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Course Outline
AUTOMOTIVE BODY REPAIR AND REFINISHING 1 - 9033
(Body Construction and Trim)
Department 48 - Quin 9033.02

CE001425

DADE COUNTY PUBLIC SCHOOLS
DIVISION OF INSTRUCTION•1973

ED 092696

D A D E C O U N T Y P U B L I C S C H O O L S

1 4 5 0 N O R T H E A S T S E C O N D A V E N U E

M I A M I, F L O R I D A 33132

Course Outline

AUTOMOTIVE BODY REPAIR AND REFINISHING 1 - 9033
(Body Construction and Trim)

Department 48 - Quin 9033.02

county office of

VOCATIONAL AND ADULT EDUCATION

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Dade County Public Schools
Miami, Florida 33132

January, 1973

Published by the School Board of Dade County

Course Description

9033	48	9033.02	BODY CONSTRUCTION & TRIM
State Category Number	County Dept. Number	County Course Number	Course Title

This quinmester course is designed as one of a group of quinmester courses offered in the field of auto body repairs. The student will receive the general information, technical knowledge, basic skills, attitudes and values that are required for job entry level as auto body repair helper. A realistic study of the construction of the automotive body and components and the replacement of glass and trim panels are included in this quinmester course outline. This course will be given in a 9-week period.

Indicators of success: The applicant must demonstrate an eighth grade equivalency score in reading and math, and also have average ability in mechanical aptitudes.

Clock Hours: 80

PREFACE

The following quinmester course outline is a guide to help students become employable with skills, knowledge, attitudes and values necessary for performing the required service of the auto body repair trainee.

This course is designed as a foundation quinmester course for the auto body repair trainee. This outline consists of eight blocks of instruction which are subdivided into several units each. It is only one part of a series of quinmester outlines designed for the complete auto body repair trainee. This course is 80 hours in length.

Prerequisites for this course is as follows: The student should have an eighth grade equivalency score in reading, comprehension, arithmetic fundamentals and mechanical aptitude. The student must be physically and mentally able to profit from this training.

Prior to entry into this course, the vocational student will display mastery of the skills indicated in Introduction to Auto Body and Refinishing (9033.01).

Instruction will consist of demonstrations, lectures, group discussions, audio visual aids and resource people from industry. Instruction will be flexible to meet individual needs and abilities.

The bibliography appearing on the last page of this outline lists several basic references, also supplementary references and audio visual aids.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee and the Vocational Curriculum Materials Service and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown

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Automotive Hand Tools	1
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Types of Panels	2
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V. UNITIZED FRAME AND BODY CONSTRUCTION (10 Hours)	
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Manufacturing Methods	4
Assembly Methods	4
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GOALS

The Auto Body Repair Trainee must be able to:

1. Demonstrate an understanding of school and shop rules.
2. Demonstrate an understanding of safety rules and work habits.
3. Demonstrate the ability to select and use the proper tools needed to perform the assignment.
4. Demonstrate an understanding of the automotive body construction and materials.
5. Demonstrate an understanding of the conventional frame types and construction.
6. Demonstrate an understanding of the unitized frame and body construction.
7. Demonstrate an understanding of the types of frame and body equipment and accessories.
8. Demonstrate an understanding of the auto body interior and exterior trim.
9. Demonstrate an understanding of the removal and installation of automotive glass.
10. Satisfactorily complete the post test.

SPECIFIC BLOCK OBJECTIVES

BLOCK I - ORIENTATION

The student must be able to:

1. List shop rules by written assignment.
2. List safety rules by written assignment.
3. Explain what will be expected of him in the auto body welding repairs by oral or written assignments.
4. List the opportunities that are available for a career in the auto body occupation by written assignment.
5. Exhibit pride and respect for craftsmanship by his actions in the shop or laboratory.
6. Demonstrate an understanding and acceptance of his duties and responsibilities by his performance.

BLOCK II - SERVICE TOOLS AND BENCH SKILLS

The student must be able to:

1. Define the general types of tools by selection and identification test.
2. Exhibit the ability to use the proper tools and bench skills for the assignment by shop performance.
3. Demonstrate proper care and maintenance of tools and equipment by observation and shop performance.
4. Exhibit the ability to practice safety precautions in the use of tools and equipment by observance and practice of shop rules.
5. Exhibit the ability to properly use the measuring devices by performance in the shop.

BLOCK III - AUTOMOTIVE BODY CONSTRUCTION

The student must be able to:

1. Demonstrate an understanding of the history of body and frame construction by oral assignment.
2. Define the methods used for providing strength in auto body and frame construction by written assignment.
3. List the types of body construction used for automobile and commercial use by oral assignment.
4. List the types of conventional frames used in the automotive consturction by written assignment.
5. List the types of unitized frame and body used in the automotive construction by written assignment.
6. Define the panels used in the automotive and commercial construction by oral assignment.

BLOCK IV - CONVENTIONAL FRAME TYPES AND CONSTRUCTION

The student must be able to:

1. List the types of conventional frames used in automotive construction by oral assignment.

2. Define the types of construction used in the conventional frames by oral assignment.
3. Explain the types of frame reinforcements by oral assignment.
4. List the methods used for conventional frame construction by written assignment.

BLOCK V - UNITIZED FRAME AND BODY CONSTRUCTION

The student must be able to:

1. List the materials used for construction in the unitized body by oral assignment.
2. List the types of construction used in unitized body by oral assignment.
3. List the manufacturing methods of the unitized body by written assignment.
4. List the assembly methods used for unitized body by oral assignment.

BLOCK VI - AUTOMOTIVE BODY TRIM

The student must be able to:

1. Demonstrate an understanding of the exterior trim and hardware by oral assignment.
2. Exhibit the ability to remove and replace the exterior trim and hardware by performance in the shop.
3. Demonstrate an understanding of the interior trim and hardware by oral assignment.
4. Exhibit the ability to remove and replace the interior trim and hardware by performance in the shop.

BLOCK VII - AUTOMOTIVE GLASS

The student must be able to:

1. List the types of windshields and rear window glass by oral assignment.
2. Explain the construction of automotive glass by oral assignment.
3. Explain the function of automotive glass by oral assignment.
4. Exhibit the ability to remove and replace automotive glass by performance in the shop.
5. Define the types of door glass used in automobiles by oral assignment.
6. Explain the construction of glass used in automobile doors by oral assignment.
7. Explain the function of the door glass by oral assignment.
8. Exhibit the ability to remove and replace the door glass by performance in the shop.
9. Explain the types of quarter glass used in automobiles by oral assignments.
10. Explain the construction and function of the quarter glass by oral assignment.
11. Demonstrate an understanding of the methods of operation of the door and quarter glass used in automobiles by performance in the shop.

BLOCK VIII - QUINMESTER POST TEST

The student must be able to:

1. Satisfactorily complete the quinmester post-test.

Course Outline

AUTOMOTIVE BODY REPAIR AND REFINISHING 1 - 9033
(Body Construction and Trim)

Department 48 - Ouin 9033.02

I. ORIENTATION

A. Objectives of Course
   1. Standards
   2. Methods of evaluation
      a. Oral test
      b. Written test
      c. Manipulation
      d. Diagnosis and job performance

B. Student Benefits
   1. Opportunities for employment
      a. Job opportunities
      b. Scope of trade
   2. Qualification for employment
      a. Job competency
      b. Attitude
      c. Dependability
      d. Pride and workmanship
      e. Experience
      f. Trade certificate
      g. Foundation for more education and training

C. Student Responsibilities
   1. Safety regulations
   2. School policies and expenses
   3. Shop rules and procedures
      a. Use and care of equipment
      b. Care of hand tools
      c. Appropriate dress
      d. Reporting loss of equipment
      e. Housekeeping
      f. Reporting defective equipment
      g. Materials and supplies
      h. Employer-employee relations
      i. Employee-customer relations

II. SERVICE TOOLS AND BENCH SKILLS

A. Automotive Hand Tools
   1. Types and sizes
   2. Uses and safety practices
      a. Assembly
      b. Disassembly
      c. Hammering
      d. Sawing
      e. Drilling

II. SERVICE TOOLS AND BENCH SKILLS (Contd.)

f. Tapping
g. Adjusting
h. Power tools
i. Vises and clamps
j. Straightening devices
k. Soldering

B. Measuring Devices
1. Steel tape
2. Tram gauge
3. Center line gauge
a. Numerical measurements
b. Comparative measurements

III. AUTOMOTIVE BODY CONSTRUCTION

A. History of Body and Frame Construction
1. Body
2. Frame
a. Wood
b. Steel
c. Cloth
d. Rubberized canvas
e. Square
f. Angular

B. Construction Methods for Providing Strength
1. Type
2. Construction
3. Material
a. Steel
b. Aluminum
c. Crowns
d. Angles
e. Flanges
f. Box

C. Types of Body Construction
1. Automobile
a. Sedan
b. Hardtop
c. Convertible
2. Commercial
a. Truck
b. Bus

D. Type of Panels
1. Automobile
a. Fender
b. Hood

III. AUTOMOTIVE BODY CONSTRUCTION (Contd.)

c. Cowl
d. Dash
e. Door
f. Floor
g. Roof
h. Rear quarter
i. Rocker
j. Deck lid
k. Rear body

2. Truck and bus
a. Fender
b. Hood
c. Cowl
d. Dash
e. Door
f. Floor
g. Roof
h. Rear body

IV. CONVENTIONAL FRAME TYPES AND CONSTRUCTION

A. Types of Frames
1. Ladder
2. Hour glass
3. Perimeter
4. Offset

B. Types of Cons
1. Angle
2. "U" channel
3. Box
4. Tubing
5. Z stock
6. "I" beam

C. Frame Reinforcements
1. Crossmember supports
2. "X" crossmembers

D. Frame Construction Methods
1. Welded
2. Bolted
3. Riveted

V. UNITIZED FRAME AND BODY CONSTRUCTION

A. Construction Materials
1. Steel
2. Aluminum
3. Alloys

V. UNITIZED FRAME AND BODY CONSTRUCTION (Contd.)

B. Types of Construction
   1. Angle
   2. "U" channel
   3. Box
   4. Panels

C. Manufacturing Methods
   1. Pressed
   2. Drawn
   3. Stamped
   4. Molded

D. Assembly Methods
   1. Electric arc weld
   2. Electric spot weld
   3. OXyacetylene weld
   4. Bolted

VI. AUTOMOBILE BODY TRIM

A. Exterior Trim and Hardware
   1. Methods of manufacture
      a. Cast
      b. Stamped
      c. Formed
   2. Methods of installation
      a. T bolts
      b. Barrel clips
      c. Speed clips
      d. Screws
      e. Plastic clips
      f. Glue
      g. Rivets

B. Interior Trim and Hardware
   1. Function
   2. Description
   3. Construction
   4. Material
      a. Fabric
      b. Plastic
      c. Vinyl
      d. Chrome
      e. White metal
      f. Aluminum
   5. Remove and replacement
      a. Methods
      b. Type of fasteners
      c. Special trim tools

VII. AUTOMOTIVE GLASS

A. Windshield and Rear Window
   1. Types
      a. Flat
      b. Curved
      c. Clear
      d. Tinted
   2. Construction
      a. Laminated
      b. Tempered
   3. Function
      a. Stationary
      b. Moveable
   4. Remove and replacement
      a. Methods
      b. Special glass tools
      c. Type of mounting
         (1) Rubber mount
         (2) Synthetic rubber compound
         (3) Frame mount
         (4) Sealers
      d. Alignment

B. Door Glass (Front or Rear)
   1. Types
      a. Flat
      b. Curved
      c. Clear
      d. Tinted
   2. Construction
      a. Plate
      b. Laminated
      c. Tempered
   3. Function
      a. Stationary
      b. Moveable
      c. Ventilated
   4. Remove and replacement
      a. Methods
      b. Special door glass tools
      c. Type of mounting
         (1) Rubber mount
         (2) Synthetic rubber compound
         (3) Frame mount
         (4) Sealers
      d. Adjustments
   5. Methods of operation
      a. Manual
      b. Electric
      c. Hydraulic

VII. AUTOMOTIVE GLASS (Contd.)

C. Quarter Glass
1. Types
   a. Flat
   b. Curved
   c. Clear
   d. Tinted
2. Construction
   a. Plate
   b. Laminated
   c. Tempered
3. Function
   a. Stationary
   b. Moveable
   c. Ventilator
4. Remove and replacement
   a. Methods
   b. Special quarter glass tools
   c. Type of mounting
      (1) Rubber mount
      (2) Synthetic rubber compound
      (3) Frame mount
      (4) Sealers
   d. Adjustments
5. Methods of operation
   a. Manual
   b. Electric
   c. Hydraulic
   d. Vacuum

VIII. QUINMESTER POST TEST

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Supplementary References:

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2. ABC of Hand Tools, Part II. 16 mm. 16 min. Color. Sound. General Motors.	1-11397
3. Accidents Happen to Sam. 16 mm. 13 min. B/W. Sound. National Safety.	1-11339
4. Hammers. 16 mm. 11 min. B/W. Sound. 1943. United World Films, Inc.	515
5. I Want A Job. 16 mm. 26 min. B/W. Sound. Ford Motor Co.	1-11568
6. Krow Your Car. 16 mm. 15 min. B/W. Sound. 1945. United World Films, Inc.	993

Films (Contd.)

7. Pliers and Screwdrivers. 16 mm. 18 min. B/W. Sound 1943. United World Films, Inc. 525

8. Punches, Drills and Bars. 16 mm. 14 min. B/W. Sound. 1943. United World Films, Inc. 527

A P P E N D I X

QUINMESTER POST-TEST SAMPLE

QUINMESTER POST-TEST

Name _____ Date _____ Score _____

The following items are multiple choice. Select the one you believe correct. Circle the letter provided at left of item.

1. The first automobiles were usually constructed of:

   a. paper
   b. glass
   c. aluminum
   d. wood

2. A curved surface in the automobile body panels are commonly called:

   a. crowns
   b. dollies
   c. buckles
   d. frames

3. Basic classifications used to describe the crown of any panel are:

   a. high, low, reverse, middle
   b. high, low, reverse
   c. high, low, reverse, high and low
   d. high, low, high and low

4. The type of crown having the most strength is the:

   a. reverse
   b. high
   c. low
   d. none of above

5. The center area of the roof panel is an example of a:

   a. high crown
   b. reverse crown
   c. high and low crown
   d. low crown

6. Angles and flanges are another method of shaping metal to:

   a. gain strength
   b. lose strength
   c. stack it in piles
   d. none of above

7. The basic types of reinforcements are:

   a. flat metal and u channels
   b. flat metal and box construction
   c. U channels and box construction
   d. U channels and metal beads

8. Frames are usually made:

   a. wider at the front than at the rear
   b. same width from front to rear
   c. wider at the rear than at the front
   d. none of above

9. The type of construction used for the automobile frame is:

   a. U channel
   b. box construction
   c. angle
   d. all of above

10. Conventional automobile frames are mounted and assembled at the factory on a:

   a. die
   b. jig
   c. automobile body
   d. flat steel plate

11. When the body panels and frame are welded together it is called a:

   a. conventional body
   b. tubular body
   c. unitized body
   d. angular body

12. Unitized bodies are:

   a. easier to repair
   b. more difficult to repair
   c. unrepairable
   d. none of above

13. When repairing the unitized frame and body, the frame and body must be repaired:

   a. as a single unit
   b. by removing all damaged sheetmetal first
   c. separately
   d. none of above

14. Body mouldings are formed by:

a. dies
b. stamped
c. molds
d. all of above

15. Body mouldings are made from:

a. brass
b. aluminum
c. white metal
d. all of above

16. Plastic moulding clips are used to prevent:

a. rust
b. water leaks
c. distortion
d. adhesion

17. Spring moulding clips are used for:

a. inaccessible area
b. easy installation
c. time saving
d. all of above

18. T bolt moulding clips are used in:

a. inaccessible areas
b. accessible areas
c. all interior trim
d. door handles

19. The purpose of exterior mouldings is:

a. body design
b. additional strength
c. protect paint
d. all of above

20. The purpose of exterior mouldings is:

a. appearance
b. protection
c. protect paint
d. all of above

21. To remove door trim panel it is necessary to:

a. remove door
b. remove door hinges
c. remove door interior hardware
d. remove door outer panel

22. The type of construction used in automotive glass is:

    a. laminated
    b. plate
    c. tempered
    d. all of above

23. The windshield and rear window glass are usually:

    a. flat or curved
    b. clear or tinted
    c. rubber mounted or glued in place
    d. all of above

24. The raising and lowering mechanism of the door glass is the:

    a. window stop
    b. window regulator assembly
    c. window channel
    d. window weatherstrip

25. Usually door windows stick so that they cannot be raised or lowered because of:

    a. misalignment
    b. lack of lubrication
    c. wrong type of weatherstrip
    d. wrong type of windlace

QUINMESTER POST-TEST ANSWER KEY

1. d
2. a
3. c
4. a
5. d
6. a
7. c
8. c
9. d
10. b
11. c
12. b
13. a
14. d
15. d
16. a
17. c
18. b
19. d
20. d
21. c
22. d
23. d
24. b
25. a